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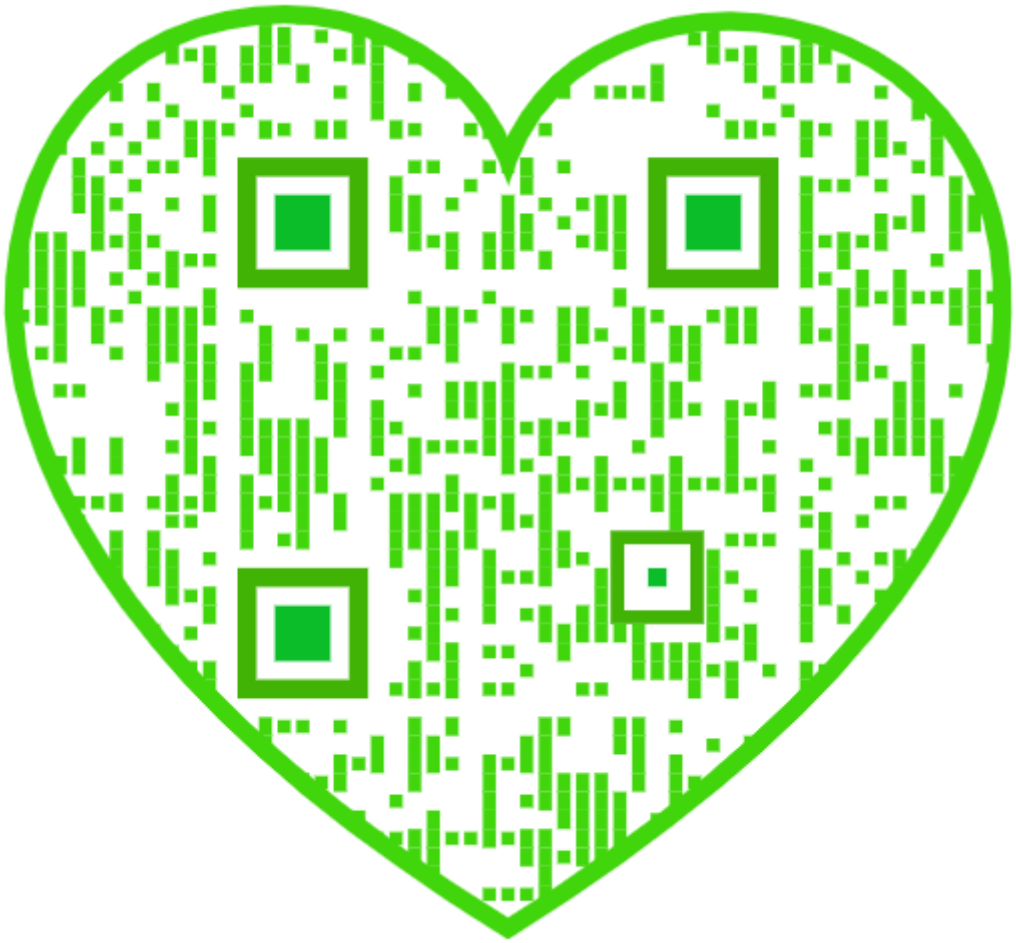
HOW TO MAKE A LITHOGRAPH



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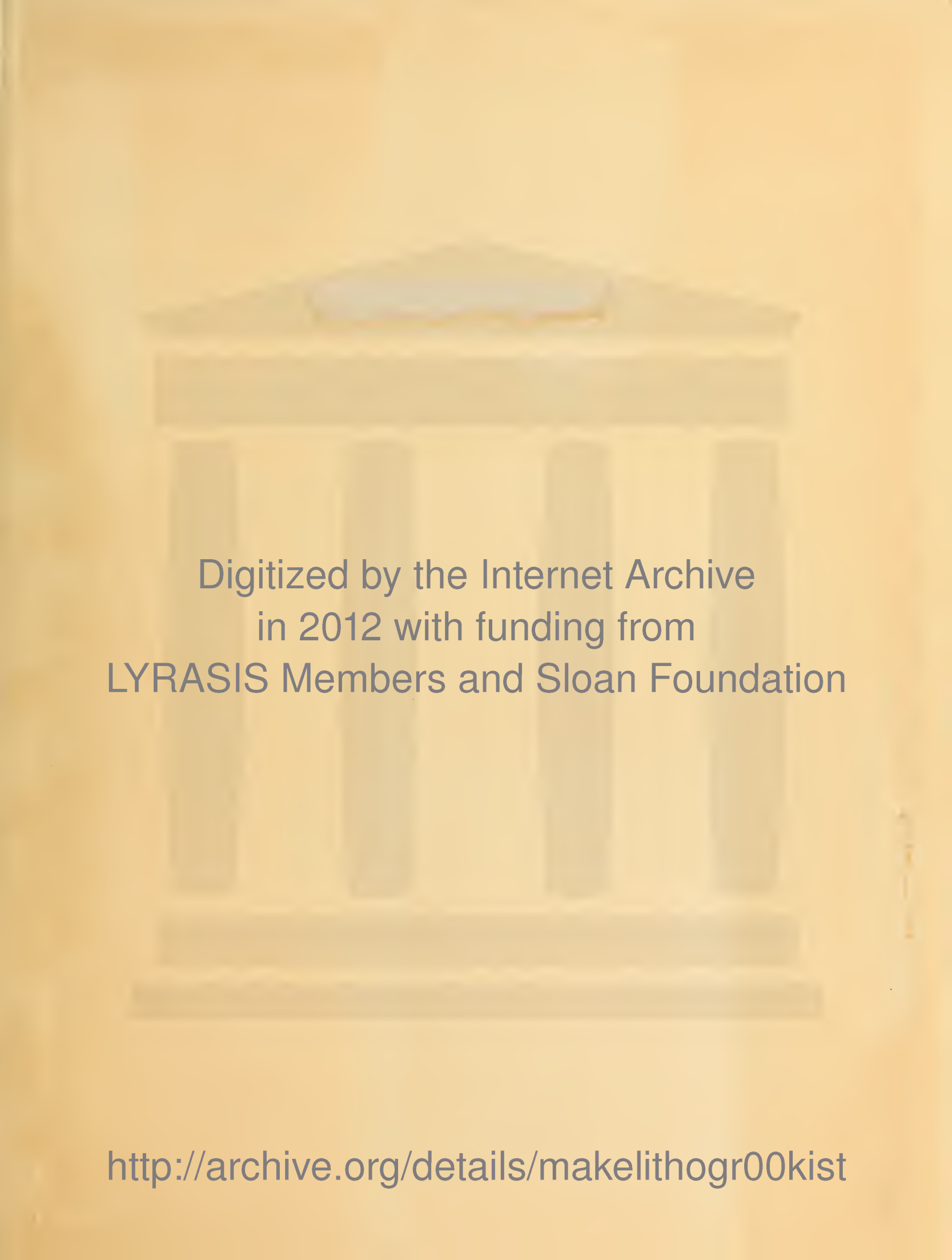
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HOW TO MAKE A LITHOGRAPH

By Lynton R. Kistler

Photographs by Fred Swartz

The Art of Stone Lithography — Drawing on, and Printing from Stone with detailed instructions and complete formulas. A Visual Aid for Universities, Art Schools, Museums and Libraries. Complete with twenty-five Plates.

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AN INTRODUCTION TO LITHOGRAPHY

Lithograph Stones are natural limestone, the best grade of which comes from near Munich in Germany. Their color is indicative of their grade, hardness and textural structure.

They range in color from a buff, through light grey to a very dark grey. Some of them are nearly as black as slate. The buff stones are soft and of coarser granular structure. They do not stand the etch well, will not take the finer grains and for this reason are used for coarser work and tint plates. Their color is favorable for drawing.

The light grey stones are best for most uses. They are of finer texture, stand the etch well, will take and hold a fine grain and are of good color to draw upon.

The dark grey stones are the hardest and have the finest granular structure. They will take the finest grain, hold the most delicate work and stand the strongest etch. Their dark color makes them difficult for the artist to draw upon. If they are too dark this feature makes them impossible to use.

Limestone is very susceptible to chemical changes. The ease with which the surface may be changed with chemicals is the feature that makes it the desirable surface it is for lithography. It has an affinity for grease and reacts instantly and even vigorously to most acids.

The purpose of the artist's work is to establish a greasy area on the stone which becomes the printing surface. Etching establishes hydroscopic areas on the stone.

These two dissimilar areas react to exactly opposite physical properties. One of these surfaces is greasy, the other hydroscopic. Oil and water will not mix. This basic principle makes lithography possible.

The greasy surface is established by drawing on the stone with crayon, brushing on tusche (lithographic writing ink) or using the tusche with a pen. These areas may in turn be modified by scraping off the tusche or crayon with needles, knives, etc., giving an infinite range of effects.

The artist can tell what his print will be like from his drawing on the stone. In fact, the only purpose of the pigment in crayon or tusche is to establish a greasy surface on the stone. The pigment is inert. It simply acts as a guide for the artist.

After the artist has established the design on the stone in the greasy crayon, the stone is then etched with a solution of nitric acid and gum arabic which renders the areas which have not been drawn upon, hydroscopic. To call this etching is a misnomer because what really takes place is a desensitization. The areas so treated will not readily take on more grease. The purpose of the acid is to make the gum arabic adhere to the stone more firmly. The acid in fact acts mostly as a catalytic agent for the gum. Its mordant action on the stone is slight.

The gum is next washed off the stone with water. A solvent is used to wash the crayon and tusche off. The drawing at this stage becomes almost invisible on the stone. Only a greasy, ghost image is left on the stone.

The stone is rolled while damp, with a leather roller charged with lithograph ink which is greasy in nature. The ink will not adhere to the stone where it is damp (those areas which have been etched). The ink goes only to those areas on the stone where a greasy surface has been established and which have repelled the water. The most minute hydroscopic spot will take water and repell the ink.

The stone is rolled till it is fully inked. A piece of dampened paper is laid on the stone. Packing is added. Finally a tympan (sheet of metal or pressboard) is put on top of the packing for the press scraper to ride upon. The impression lever is pulled. The bed of the press with the stone on it is passed under the scraper. The impression applied to any point of the stone at one time is a quarter inch strip across the width of the stone.

The print is then pulled from the stone. The stone is then re-inked for another print. With careful presswork, hundreds of prints may be pulled from a single stone.

The autographic nature of lithography makes it the greatest of the print mediums. It reflects the artist's work and character completely, allows the artist the utmost freedom; provides a wide variety of techniques; has an infinite range of values; can print an absolute black against an exceedingly delicate area; can print a fine pencil drawing or a fine white line on a completely black background.

Many identical prints can be taken from the stone and each print is an original work of the artist when signed by him.

It is wise for the artist to have a competent printer to pull his editions if he is serious about selling his work. But if he is looking for an interesting diversion he should try his hand

at printing. He may not become an expert but he will have a lot of fun. This also will give him an appreciation of the craft. The experience will help him guide his printer's efforts. The artist who tries to do all his own work sometimes ends up a bad artist and a good printer. The usual result however, is a poor artist and a bad printer also.

Every printer finally establishes his own routine. He has his own pet methods and formulas. There are many variations of the procedure contained in this book. Many as good; some may be better, but the routine and formulas set forth herein are sound to build upon. They are the principles used in a very successful printing career.

It should not be supposed that an erudite knowledge of the lithographic method will make one a competent printer. The appellation of "craftsman" can only be earned after hours of practice and many years of experience. And it does exhaust the skill of a craftsman to properly print all the many subtleties the artist may put upon a litograph stone.

1.

DAMPING THE PAPER

Each piece of paper to be used in the printing is moistened on both sides. A fine grained cellophane sponge is best for the purpose. A few drops of Carbolic acid in the water will help to prevent mold forming on the sheets and on the blotters.

The damping of the paper is for the purpose of softening the fibres, so close contact can be made between the stone and the paper surface.

Care must be taken not to get the paper too wet. Just enough moisture to make the paper limp-- no more.

2.

THE DAMP BOOK

The paper should be put under pressure after damping. This keeps it flat and helps to moisten the paper evenly. The paper must be allowed to stretch after moistening and before the pressure is applied. This will avoid wrinkles.

The paper is stacked in lifts of ten to twenty pieces to a lift. Damp blotters are put on the top and bottom of each lift. The lifts are separated by three-eighths inch plywood dividers. This helps keep the paper flat.

The paper should be left in the press for at least twenty-four hours for even moistening. When it is taken out it should be wrapped in a rubber blanket or oil cloth to keep it from drying out. A properly damped sheet is the first requirement in making a good lithograph.

3.

GRINDING OFF THE OLD IMAGE

Coarse carborundum, water, and either another lithograph stone or a levigator are used to remove the old image. If the old image is light, the operation may be done in half an hour. If the old image is heavy it may take two hours or more to grind it off. The muller, or upper stone is oscillated in wide strokes and in a regular pattern over the surface of the stone. The grinding is concentrated more on the edges than in the middle to avoid making the stone hollow in the center.

The sludge should not be removed from the stone for it helps in the grinding. Keep the stone wet at all times and do not let the carborundum get too low or you will get scratches on the stone that are difficult to remove.

4.

LEVELING UP THE STONE

A level stone is a necessity for first class prints. After grinding off the old image it should be tested with a straight edge. Four points across its length and breadth and both diagonals should be tested. Placing the straight edge on the stone, it should not be possible to pull a half inch strip of newsprint from under it without moving the straight edge or tearing the paper. The stone should be tested at frequent intervals on the straight edge. If the stone is found to have hollows or is low at any point, the rest of the surface of the stone must be ground down to the lowest point of the stone. This can usually be done more quickly with a smaller muller.

When the stone is level, the edges should be filed down to remove sharpness and any irregularity. Then they should be smoothed with a lump of pumice. This keeps the edges of the stone from printing.

5.

PUTTING THE FINISH ON THE STONE

After the stone has been leveled, it is put through successively finer grinds of carborundum till the desired fineness of grain has been reached. A stone ground with 220 GG carborundum has a medium grain.

A lighter weight muller, a piece of old lithograph stone, makes the best to finish up with. The rotation of the muller is reduced to four or five inches in diameter for the finish. A regular pattern should be followed and the grinding is done with a light touch. Throw on a little fresh carborundum just before the stone is finished for a real sharp grain. Keep water and carborundum on the stone at all times.

6.

DRAWING ON THE STONE

The stone is now ready to draw on. Crayons, tusche, rubbing ink, and scrapers, needles, razor blades are used to put the

design on the stone and then modify it for variety in texture. The drawing is usually done directly on the stone. A great variety can be achieved. Pencil drawing, crayon drawing, charcoal, dry brush work, ink drawings with both brush and pen, and wash, are a few of the familiar methods of working that can be used. In addition to these are an infinite number of results unique to the process itself. Lithography is not a method of reproduction but an artist's medium.

Weeks can be put on a small 12x16" stone. A finished work of art can be completed on the same size stone in twenty minutes. The medium is flexible, the work on the stone is the artist's own individual expression.

The scraping should be done as a general rule after the crayon or tusche work is finished to avoid removing the grain from the stone. The beautiful half-tones of the crayon work are not possible when the grain is gone. The scraping should be done with decision. The stone should never be gouged, but a little of the surface should be removed to get a clean line.

The following should be observed when drawing on the stone:

1. Use a bridge or barrel stave to avoid smearing the stone.
2. Do not blow your breath on the stone for saliva may get on it and etch it. The work will lift on these places damaging the drawing.
3. Keep the stone covered when not working on it.
4. Work your stone in a clean place. Do not choose a kitchen where cooking is going on and expect good work.
5. Keep the stone out of warm sunlight at all times.
6. Warm the stone to take the chill off in cold weather.

Lithography should be regarded as an original medium, not as a means of reproduction. Its inherent possibilities give it a validity of its own. The use of the medium should be justified in one good print from the design. The multiple duplication of an original work of art is an extra dividend for artist and patron alike.

Particularly attractive is the fact that all methods of working may be used on the same stone. Use the stone as you would a piece of paper. It can be refinished if the drawing does not suit you.

7.

DRAWING IN REVERSE

A mirror will facilitate drawing in reverse. Use a large one to allow you the greatest freedom.

A tracing is made of the original sketch. This is then reversed by putting the drawing side of the tracing next to the stone. Then a piece of newsprint paper is rubbed lightly with red chalk on one side. This is placed under the tracing, chalk side to the stone. The lines are then traced to the stone. Do not make your drawing complete but give yourself just sufficient image so you can readily follow your sketch. The red lines will not print because the red chalk is not greasy.

A little more freedom can be achieved, if instead of making a tracing, the composition is lightly laid out in red conte pencil.

8.

MIXING THE ETCH

The principal ingredients of the etch are gum arabic and nitric acid. Pure gum sorts are the best grade of gum arabic. The nitric acid should be of C.P. grade. Phosphoric Acid 85% syrupy is also used in the formula. Tannic Acid, fluffy, is required too.

Two things must be observed. Mix fresh etch for each stone. Do not use gum which smells sour.

For best results the etch should be carefully mixed.

The following table should not be regarded as rigid but it will provide an excellent point of departure and a standard to check against.

The table provides for the etching of a 12x16" stone which would have about 200 square inches. The room temperature is assumed to be 72 degrees, the relative humidity 50%. The volume of gum is one ounce. The length of etching time is not important because in the five minutes allowed for the etching of the stone the reacting power of the acid is exhausted.

Pure gum arabic sorts should be allowed to stand covered with water over night. The gum should be strained through cheesecloth and if necessary thinned to the consistency of strained honey. The gum should not be watery and still should not be too thick to spread easily with a soft brush.

TABLE OF ACID STRENGTH FOR ETCHING STONES
Nitric and Phosphoric Acids are in drops, Tannic in grains.

	Heavy Drwng	Medium Drwng	Light Drwng	Delicate Drwng	Very Delicate Drwng
Yellow Stone					
Nitric	15	12	8	4	0
Phosphoric	5	5	4	3	0
Tannic	6	6	6	5	6
Lt. Grey Stone					
Nitric	18	15	10	5	0
Phosphoric	5	5	4	3	0
Tannic	6	6	6	5	6
Dark Grey Stone					
Nitric	20	18	13	8	3
Phosphoric	5	5	5	4	2
Tannic	6	6	6	6	8

Many printers use only nitric acid for etching. This works very well. However, the above formula has been found to eliminate scum in the work and keep it open to an unusual degree. It is given for the first etching only. For re-etching, the formula should be reduced one-third. Where no Nitric Acid has been used on the first etch, two or three drops should be added on the re-etch. A strong etch is not necessary, even for large editions.

9.

ETCHING THE STONE

First the work is powdered with French chalk and the surplus gently dusted off with a clean piece of cotton.

The etch is then painted onto the stone with a wide soft brush and allowed to stand five or ten minutes till the acid has worked itself out. Blot off the surplus etch with a clean piece of newsprint and smooth the balance down with a soft rag or piece of cheese cloth.

It should be understood that the etching action takes place on the stone only where there is no drawing or grease on the stone. The object of the etch is to desensatize those areas, make them hydroscopic and prevent them from taking on ink when the stone is printed. The grease in the crayon or tusche repels the gum arabic and acid preventing any chemical action by the gum and acid on

these areas.

It should be understood that the gum arabic is the active ingredient. It adheres to the surface of the stone, causes the water to be spread on the surface in a thin even film and prevents the work from thickening. The nitric acid acts only as a catalytic agent, causing the gum to adhere more firmly to the stone. The phosphoric acid smooths the stone slightly and reduces its tendency to scum. The Tannic acid toughens the gum, making it last longer.

If the stone is not sufficiently etched the first time, it may be necessary to give it another bite. In this case, the stone should be rolled-up in rolling-up ink, powdered with rosin and French Chalk and re-etched as above. The solution should be one-third weaker, at least.

The darker areas of the stone should receive extra attention. A stronger solution may even be used on them.

10.

SMOOTHING THE ETCH *** or GUM ARABIC

The smoothing of the etch or the gum is one of the most important operations in the process. Uneven gum will spoil an excellent drawing or a fine tone.

First a pad should be made of a piece of cheese cloth by turning the corners into the center till a soft ball results. The surplus etch or gum should then be blotted off the stone.

The smoothing should be done lightly, rapidly, with an even touch and without hesitation. In warm weather it may be found necessary to moisten the gum rag to keep the surface of the stone from drying before the operation is accomplished.

A faltering stroke, a heavy hand or an unevenly gummed stone can ruin an excellent piece of work. Fan the Stone dry.

11.

STORAGE OF ROLLERS

The lithograph roller should not be allowed to lay on its side for any length of time. It should be put in a rack or holder even for an hour's idleness. Some printers prefer to bore holes into their bench and store their rollers vertically.

If the rollers are not to be used for several days, scrape off the printing ink, roll them up in transfer ink, cover them in waxed paper. This will keep them soft and clean for a few days.

If the rollers are not to be used for several months, scrape them out. Cover them with lard or mutton tallow. Wrap them in waxed paper. They may be put away indefinitely in this condition. Be sure to scrape them out thoroughly before using.

12.

CARE OF THE ROLLERS

The lithograph roller is the printer's most prized possession. It is made of the finest French Calf leather- knap on the outside. It must be kept soft and pliable to do good printing. The leather must be kept tight. It must be kept clean and free from lint. Since it has a tendency to pick up all the dirt from the printing stone, it must be scraped daily with a dull knife. It is fortunate that the roller will pick the dirt and lint from the stone for otherwise it would be almost impossible to get a good print.

Ink must not be allowed to dry on the roller or it will permanently ruin it for use.

When the knap becomes flat and caked with lint, the roller must be cleaned out with coal oil. This should only be necessary about once a month. Do not use turpentine for this operation. It will dry out the leather.

When you start to print in the morning, the roller should look velvety. The knap may mat down during the printing, but by starting with the roller in good shape, it is prepared for a day's work. If the roller is in good shape the knap can easily be raised.

Damp days bring roller trouble. The roller absorbes water as the stone is rolled. On ordinary days this water evaporates, but on wet days the roller becomes waterlogged and scums the stone. The roller should be scraped to remove the excess water when it starts to tint the stone.

It is well to have two rollers for black ink. When the day is wet or when the stone is large, changing off rollers may obviate scraping.

If the roller is properly broken in before it is inked, it will be a delight to use and it will last a life time. To break in a new roller, it should be rubbed with a solution of half castor oil and half neats foot oil. Rub this into the roller at frequent periods over six months time. Apply this solution till the roller will take no more. Then let set till the six months are up.

When you are ready to ink the roller, scrape it out several times. Then start working in No 5 varnish. Knock the roller up on the slab, scrape out the varnish and apply a new lot. Keep this process up till the roller yields only a small amount of knap when you roll it on the slab. It may take several days work to get the loose knap off the roller.

You can start feeding thin ink to the roller at this point. As soon as the roller can be made to take ink of printing consistency it may be tried out on a stone.

Leather rollers should be prepared for color in the same way and a separate roller should be kept for each of the primary colors.

13.

INKING THE SLAB

Even distribution of the ink is essential. This must start with the inking of the slab. It must be spread thinly and evenly on the roller before it is carried to the stone. This means the ink must be first worked thoroughly on the slab with the roller.

The distribution of the ink begins with putting the ink on the slab. It should be spread in a wide ribbon at the head of the ink slab. The roller may then be dipped into this supply and fed evenly to the prints and thus they will be kept uniform in color.

Distribution is achieved by angling the roller on the slab, turning it end for end several times while knocking it up and rotating it a quarter turn every time it is brought back to body position. This is an important operation because it keeps the roller from hitting the same spots on the slab every time. A little 00 varnish may be necessary to get the ink to distribute properly. Do not use offset varnish, but insist on getting the real linseed variety. It is the only varnish suitable for hand work. On a wet or cold day more varnish may be necessary than usual. You may also need to add more if the surface of the paper pulls off.

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Use as little varnish as possible. It tends to thicken the stone and shorten the edition of the print. OO varnish is the best because it dilutes the color least.

14.

THE WASH-OUT

The gum arabic is washed off the stone with a sponge and water. While the stone is still wet, turpentine is sprinkled on the drawing. Keeping plenty of water on the stone, the crayon and tusche are washed off, using a soft rag. Do not scrub the stone. Work over the surface gently. Do not allow the stone to become dry. Apply more turpentine when needed. Use only pure gum spirits. When the crayon is removed the stone should be sponged with water.

15.

DAMPING THE STONE

Proper damping of the stone is as important as proper inking. For complete success and strong color, carry as little water as possible. The amount of water may be modified by the dryness of the day. On a hot day it is necessary to carry more water because it evaporates faster. The stone must not be allowed to run dry. On wet days less water can be carried.

The stone should first be sponged with a natural sponge. The water can then be evenly distributed with a coarse Cellophane sponge. The Cellophane sponge is best for this purpose because it will wring dryer and absorb more water than a natural sponge. If the Cellophane sponge is not available a soft rag may be used to smooth down the water.

Use as little water as possible and have that evenly distributed.

16.

THE ROLL-UP

This is the critical point in print making. The roller should be angled, rotated and rolled repeatedly over the stone to distribute the ink as evenly as possible. Do not roll too fast, but with a steady even stroke back and forth. Do not pound your roller on the stone, but place it on the stone firmly and roll it across the surface with an even motion. As the roller passes over the stone, those areas where a greasy surface has been established by the crayon or tusche, take ink. Where the stone is etched and it is now damp, the ink will not adhere. The design is rolled till it is fully inked. If the stone shows signs of filling,

roll a few strokes rapidly. This should pull the work out to its original brightness.

To pick up scum that may occur on the stone while rolling, let the roller run lightly and slowly over the work.

As a general rule it is unnecessary to exert pressure on the roller. But if the ink does not go down easily bear a little weight on the roller or grip the handles tighly with the leather grips while rolling. Both these operations will help the ink go down. It is usually necessary to give a slow, light roll to clean up the stone after exerting pressure.

Should the stone run dry and ink adhere to the dry spots, wet the stone immediately and roll the stone rapidly. The roller will clean up the stone without harm to the work. If the stone is not attended to immediately, when it is caught up, it may be necessary to wash it out again to remedy the difficulty.

The roller is the best cure for lithograph difficulties, there is. If the work runs thick, scrape out the roller, add fresh stiff ink to the slab. Roll the stone with the stiff ink and pull prints on newsprint till the stone is clear. A small sponge filled with gum may be used to briskly clean the stone between rolls when you are having trouble.

Almost every difficulty can be cured in this way. It may take a long time to pull the stone out but this method will do it. Do not re-etch except as a last resort. Re-etching destroys the bloom of the stone.

As a general rule it does not matter whether the stone is pulled through the press wet or dry. However, sometimes it is necessary to fan the stone dry before a satisfactory print can be pulled. This is especially the case on delicate crayon work.

A proof can now be pulled from the stone.

17.

LAYING THE PAPER

The paper is positioned before laying it on the stone. When it is once put down, care should be taken that it should not be moved. If the drawing is to be printed in an exact position on the paper, it should be laid to guide marks on the stone or the register rack should be used.

The paper must be kept clean at all times. This often seems an impossibility to the beginner, because it is hard to print with-

out getting ink on the hands. Careful handling and the use of French Chalk will help in this matter.

A thin piece of rubber dam is the best packing to use between the tympan and the paper. Nothing more is needed. Some printers use from one to several pieces of newsprint or a single piece of blotting paper as packing. These also make excellent packing.

It is wise to use clean newsprint for the first pulls because several proofs may be needed before the stone is fully inked, the packing adjusted and the pressure properly set.

18.

RUNNING THE PRESS

A tympan (piece of zinc or heavy pressboard) for the scraper to ride upon is added on top of the packing. This is lubricated with tallow, gear grease, butter or other satisfactory lubricant. The scraper is also lubricated before running the print through the press.

The scraper should be even across the whole face. Any irregularities will show in the print and eventually ruin the stone. The scraper wood should be planed down and sanded till it is level. The leather should be pliable, and tightly stretched. Soaking the leather for several days in neet's foot oil will properly condition it.

The bed of the press is moved into place. The forward edge of the stone is placed just under the scraper. The lever is pulled down and tested. The first impression should not be too heavy. Printing should always be done with the minimum pressure possible. Light drawings take light pressure as a general rule, heavy drawings a heavier pressure. However, where the drawing is delicate, it is sometimes necessary to carry a fairly heavy pressure.

When the pressure is set, pull the impression lever. Then crank the stone through the press. Pull it through slowly and steadily. Do not stop on the print or it will be spoiled. Once through is enough. Do not pull the stone back and forth under the scraper. This will spoil the print and cause the work to thicken.

Release the lever and pull the bed of the press back into inking position.

19.

PULLING THE PRINT

The print must be pulled from the stone with the utmost care. Do not jerk it from the stone but pull gently and carefully, taking

care not to tear the surface from the paper. Stiff ink and soft paper requires the utmost patience.

Pull the print from one corner, particularly if the work is heavy. There is the least adhesion here and if the print is carefully started it is usually easier to finish the pull.

The prints should be stakced in lifts of ten to twenty after coming off the press. Put a clean piece of tissue paper over each print.

Setting is a process of absorption of the oil from the ink by the paper and the evaporation of the readily volatile oils. In hand lithography this usually takes from an hour or so, to twenty-four hours because no drier is used in the ink. Complete drying of the ink sometimes takes several months.

As soon as the prints will not smear easily, the ink has set and it is safe to pick them up and stack them. They may even be pressed at this stage.

If the inking is extra heavy or if the drawing is heavy it may be necessary to lay the prints out individually until the ink has set.

20.

PULLING THE EDITION

If the stone is printing with satisfaction at this point and the edition is short, keep right on pulling till the edition is finished.

If the edges are dirty, need trimming, the drawing needs correction or a long edition is to be pulled, the stone must be made ready for printing. It must first be fully rolled up with rolling-up ink. The work is then dusted with powdered rosin, then with French Chalk. Thin gum is worked lightly over the stone with a sponge to clean out the work and keep it sharp. The stone is then sponged with clear water.

At this point any unwanted work may be removed from the stone with pumice sticks. The edges should be thoroughly cleaned. If a sharp edge is wanted on the drawing, place a straight edge along the work and run the stick pumice along the outer side of the straight edge. Care should be made to polish the stone thoroughly or the work removed in this way, will come back up on the stone.

Specks and other blemishes should be picked from the work at this point.

Keep the face of the stone wet at all times when making corrections.

Corrections are best made at this time. This will avoid local etching which is always hazardous. It is always liable to result in over-etched spots on the stone.

When corrections have been made, the stone should be re-etched. If the edition is to be long, twenty-five prints or more, one third of the original strength should be used. If the run is short, one fourth the original strength is sufficient.

The rule in lithography is to use as little etch as you possibly can.

If the stone starts to scum, scrape the roller first. If scum then persists gum and dry the stone and try again. If you still have trouble put a little tannic acid in the gum, etch it, dry it and try again. If you still have trouble, say a prayer, roll-up the stone, powder it, etch it with a solution of gum mixed: 5 drops of nitric acid, two of phosphoric and a little tannic acid. Smooth this down and let it dry on the stone. Wash-out the stone as directed above and roll it up with the new ink and you will be ready to print. Never use a strong etch.

21.

CHECKING THE PULL

Always take care of your stone first. Wet it with the natural sponge before you look at your print.

Another print is always easy to pull. A spoiled stone is sometimes impossible to replace.

Examine each print as it comes off the press. If a print is not up to par, discard it then and there. Do not risk the Temptation to second guess. If it is good, mark it with the number of its order in the lower left corner and proceed to the next print.

Each print should be examined for uniformity. Set a standard at the start of the run. Put this print up where you can see it and compare all those you pull with this one.

Look for weak color, uneven inking, over-inking, filling and thickening of the work. Watch particularly to see that the bloom of the stone is preserved.

Keep your printing fresh, observe the over-all aspect of your prints. If they start to look dingy and tired rub the wet stone with a piece of rough flannel, gum and dry the stone, scrape out the roller, scrape the old ink off the slab, put on fresh ink and start again. Do not etch the stone.

22.

REGISTERING FOR COLOR

Color printing is a subject in itself. The description given here is simply an outline.

A separate stone must be drawn for every color. Each color must fit exactly the colors previously printed.

In establishing register, a keyplate is first made. This is an outline drawing indicating the various areas of color on the design. Register marks are put at the head and foot of the key plate.

The key plate is printed on a piece of non-stretching paper with a hard surface and without dampening it.

This impression is dusted with red chalk. It is then placed face down on a fresh stone and pulled through the press. The result on the stone is a dependable guide for the color to be worked. The register will be perfect. Such a transfer must be made for each color.

The stones are printed one after the other. Usually the printing is done from light to dark colors, in hand printing. Six or eight colors are often used.

If the design can be printed dry on a plate paper, the printing is not so complicated. But if the paper must be wet for each run the work seems interminable.

Registration, or super-imposition of the colors must be exact. The use of a rack with three points of register is fast and dependable.

23

CARE AND STORAGE OF THE STONES

The stones may be kept for a long time if they are properly protected. They should be kept in a cool dry place.

While printing, the stone should be gummed in and dried if left only for a few minutes. Do not let the stone stand dry without gum on it.

When the stones are laid away, they should be rolled-up full in rolling-up ink, powdered with French Chalk and stored on their edge.

24.

AUTHENTICATING THE PRINT

The prints should be signed on the stone. Then there is never any doubt as to their author. The artist should again sign the print in pencil under the lower right corner. Do not use ink because if it ever must be restretched or renewed, the ink will run and spoil the print. The title of the picture is usually put in the center, under the work. The left side under the work is used to indicate the order of printing and the length of the edition. It is indicated thus: 1/26. The state of the print is sometimes entered here. This is also the corner where the printer puts his mark.

25

DISPLAY OF THE PRINTS

In order to look their best, the prints must be pressed flat. This is best done by damping the print just enough to stretch it a little. It is then placed between dry blotters and pressure applied in the letter-press used for damping. Be sure the prints have had a chance to absorb the water and flatten out before putting them in the press. A piece of clean tissue must be put on the printed surface to keep the lint from the blotters from sticking to the ink.

Again the prints should be put in lifts of ten to twenty prints with the three-eighths inch plywood between each lift.

When the prints have been in the press two or three hours, change them to dry blotters. Three or four changes are necessary to get them bone dry.

If the prints must be displayed immediately damp them slightly and tape them the full length of all four edges to a board or piece of glass and set them in the sun. When they are dry cut the gummed tape right next to the print with a razor blade and your print will be ready to display.

Prints should be properly displayed to reveal their true beauty.

Subdued lighting is best. They do not show to their best advantage under glass because the glare interferes.

Matted in a hinged mat, the print is preserved and shown to the best advantage. The use of tinted mats has been found to be advisable for many prints.

Generous margins are desirable. If they are too large, however, they will make the print look smaller than it really is. A plain dull finish wall of a neutral color gives the best effect.

26.

PRINTING FROM ZINC PLATES

The method for zinc plates is the same as for stone except for the etch. Fuchs & Lang Safetch is used instead of the Nitric Acid formula. Since the gum arabic water is contained in the Safetch, it is only used to extend the formula when printing medium or delicate work. If the work on the plate is heavy, use Safetch full strength. Dilute one half with gum water for medium work. Dilute with two thirds gum water if the work is light.

If it is necessary to re-etch the plate, the dilute acid may be applied without powdering or washing out the plate. In all other respects the same proceedure should be used as for printing from the stone.

Strips of paper laid along the edge of the printing plate will keep your paper clean if you are using a larger sheet of paper than your zinc printing plate.

An old lithograph stone laid on the bed of the press makes an excellent base on which to lay your zinc plates for printing.

If care is used in printing, the results from zinc can be as good as from stone. However, you cannot use the great number of techniques in drawing on the zinc, you can use on stone. Neither can you correct your work with the same freedom. Another short coming of the zinc is the fact that difficulties in printing, when the work gets "bunged up" cannot be overcome so easily. The stone offers great latitude in this regard.

Before starting to work on the plate it should be counter-etched with a solution Hydrochloric Acid, one ounce to the gallon. Wash the plate with clear water thoroughly and fan dry.

Printed by
Lynton R. Kistler
Printer and Lithographer
Los Angeles

Drawing On Stone or Metal Plates

Lithography, particularly on the stone, offers an opportunity for a great variety of techniques. The details reproduced herein are taken from actual lithographs by well known artists. They were chosen because they illustrate some particular lithographic method and are exceptionally well done. Each illustration is a different handling. Most of the methods illustrated here can be combined otherwise than shown without difficulty. With these eighteen examples an artist can get an infinite variety of effects.

A few simple rules will help however. When building up an area and you want to get smooth uniform effects, start with your hard crayons first, working slowly with a pointed crayon or pencil. Work in all directions adding a little at a time. As the work gets darker go to the softer grades till you get the value you want. Keep the stone free from dirt at all times. Pick out black specks as soon as they occur.

When using the side of the crayon do not turn it flat but use the edge. This makes possible a cleaner stroke.

As a general rule, put dry brush-work and full brush-work over your crayon. But when you do pen work, apply it to the stone before you do the crayon. It is usually easier to lay your washes before doing your crayon work.

The do's and do not's are few in lithography. The following will help make your lithograph a success:

1. Use a bridge or barrel stave to avoid smearing the work.

2. Do not blow or breathe on the stone. Saliva may etch the stone or plate causing the work to lift.

3. Keep the stone or plate covered when not working.

4. Always work in a clean place. A kitchen where cooking is in progress is not suitable.

5. Keep the stone or plate out of direct sunlight or heat.

6. Warm the stone to room temperature in cold weather.

Scraping should be done with decision. Take a little of the stone or plate with the stroke in order to get a clean area. Do not try to re-work broadly scraped areas and expect to get the beautiful effects possible on a freshly grained area. The work will be flat and textureless after the grain has been scraped away.

All the examples reproduced here were printed from stone. Some of them could have been done on zinc nearly as well. Those techniques which are suitable for zinc plates are marked. The others will not work so well on zinc. A 220 grain was used on the stone unless otherwise indicated.

Howard Warshaw. **Traffic Casualty.** No. 2 pencil with no building up of crayon. Sketched in freely. Line work put in with special pen tusche. Razor blade scraping. Possible on zinc.

Jan Stussy. **Beside the Black Pot.** Brush tusche mixed with distilled or soft water to make washes. Black areas are undiluted tusche. Stone only. Not possible on zinc.

Jean Charlot. **The Sunday Hat.** No. 3 Crayon applied in long free sweeps. The crayon was not sharpened. This work was done without preliminary sketch or guide lines. It was simply built up on the stone. The layout which was made on the stone with hard lithograph crayon became a part of the drawing. Scraping was done with a needle. Good zinc plate technique.

Phil Paradise. **Tomas.** No. 3 pencil worked over No. 4 pencil. Good zinc plate technique.

Wayne Thiebaud. **The Tree.** Brush tusche applied, allowed to dry and then scraped off to make gray areas. Gray lines are No. 2 crayon drawn over scraped areas. Black lines are pen tusche. White lines are scraped with a needle, razor blade on large scraped areas. Impossible on zinc.

June Wayne. **The Advocate.** June Wayne works with the utmost precision. Her work prints just as she conceives it. Delicate crayon work is done with No. 4 pencil worked over several times. Flat black areas are brush tusche. Irregular dots are spattered brush tusche. The regular dots are special pen tusche stippled in. Very poor for zinc.

Eugene Berman. **Appian Way.** Black lines are pen tusche. Solid blacks are brush tusche. Grays are brush tusche mixed with distilled water to make a wash. Scraping is done with knife and needle. Heavy and frequent etching were necessary in the printing to hold the work open. Impossible on zinc.

Everett Gee Jackson. **Texas Farmer Bridling a Mule.** No. 4 and No. 5 pencil. The work was gone over several times for smoothness. Short strokes, sometimes called tickling the stone. The work appeared very light on the stone when finished. Very light etching was necessary. Very good zinc plate technique.

Tyrus Wong. **Running Horse.** Stiff brush tusche. Applied with a Chinese brush. Drawn freely on the stone. No preliminary layout. Very good zinc plate technique.

Tom Blainey. **Christmas Card.** Brush tusche dabbed on with a piece of cheese cloth. White lines scraped out with needle. Impossible on zinc plates.

Dan Lutz. **The Harpist.** 00 Crayon partly scraped off with a razor blade on the gray tones. Solids then reworked in with 00 Crayon. Impossible on zinc plates.

Arthur Beaumont. **Korea Bound.** Flat edge of No. 2 and No. 3 crayons. Details drawn with sharpened No. 3 pencil. Scraping with needle. Good zinc plate technique.

Clinton Adams. **Suburban Scene.** Large solid area done with brush tusche with lines scraped out with point of razor blade then worked over with No. 3 crayon. Bush on the left is solid tusche with white lines scraped out with a needle. Light areas are first worked with Nos. 3 and 4 pencils then scratched in various patterns with a needle and then reworked with same or softer crayon. The very lightest areas were not reworked after scraping. Darker areas were first worked with Nos. 1, 2 and 3 pencils, scraped in pattern and then re-worked. Impossible on zinc plates.

Leonard Edmundson. **Abstraction.** Light washes first applied to dry stone, darker washes applied over these when dry. Line work is pen tusche over the washes. Dark areas are brush tusche applied over washes and partly scraped with flat of razor blade, pure white spots then picked out with a needle, then re-worked with pen tusche and sharp No. 2 pencil. Impossible on zinc plate.

Conrad Buff. **American Pioneers.** First a tracing in conte chalk was made on the stone. All areas to receive work were then covered with No. 4 crayon put on very smoothly and evenly working from all directions. Short careful strokes. As the areas became darker softer crayons were applied working the same as above. A very light touch is necessary for the delicate work. The flat black areas were put in with brush tusche. This sort of work takes hours of close application. An exceptionally fine example of this kind of crayon work. Possible on zinc plates. 2F Grain.

Phil Dike. **Balboa Harbor.** All crayon work was done with No. 2 crayon. Objects were then put in with stiff tusche and a dry brush technique. Linear work was done brush tusche applied with a sharpened stick. Full black areas are brush tusche applied with full brush method. Whites are scraped with a needle. Impossible on zinc plates.

Mary L. Finley Fry. **Fences.** Crayon work is built up from light to dark using hard crayons first and working towards softer crayons. Dark areas start with No. 4 and finish with No. 2. Some of the areas have been worked with pencil, scratched into with a needle, and then worked with the crayon again. White lines are scratched with a needle. Technique not good for zinc.

Richard Haines. **Bus Stop.** Loosely drawn No. 3 crayon built up without sharpening the crayon. Full strength brush tusche applied in full brush style over crayon. Scraped with razor blade. Possible on zinc.

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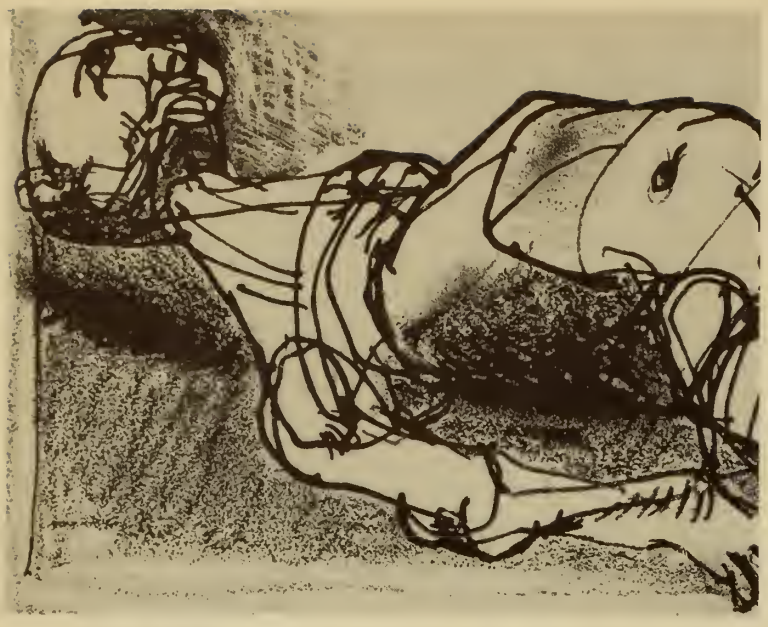


Howard Warshaw — Traffic Casualty

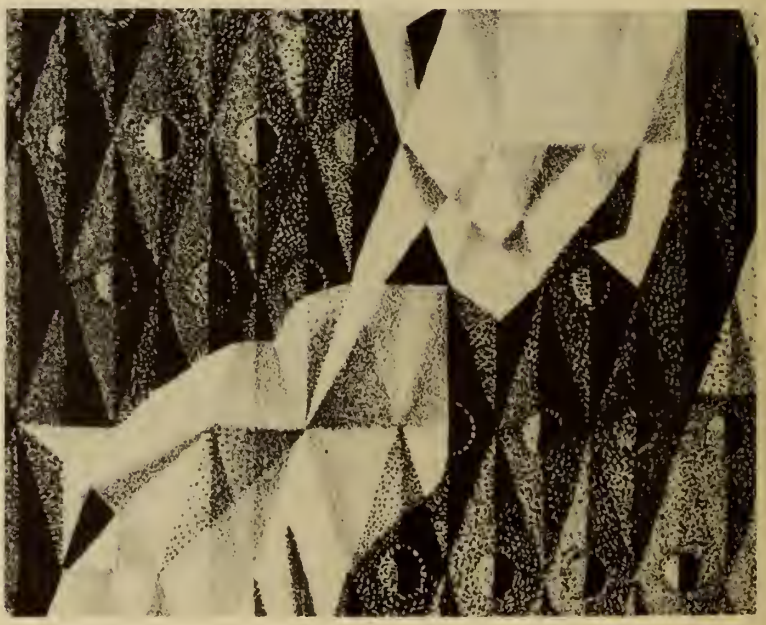
Courtesy Frank Perls Gallery

Phil Paradise — Tomas

Jan Stussy — Beside the Black Pot

Wayne Thiebaud — The Tree

Jean Charlot — Sunday Hat



June Wayne — The Advocate

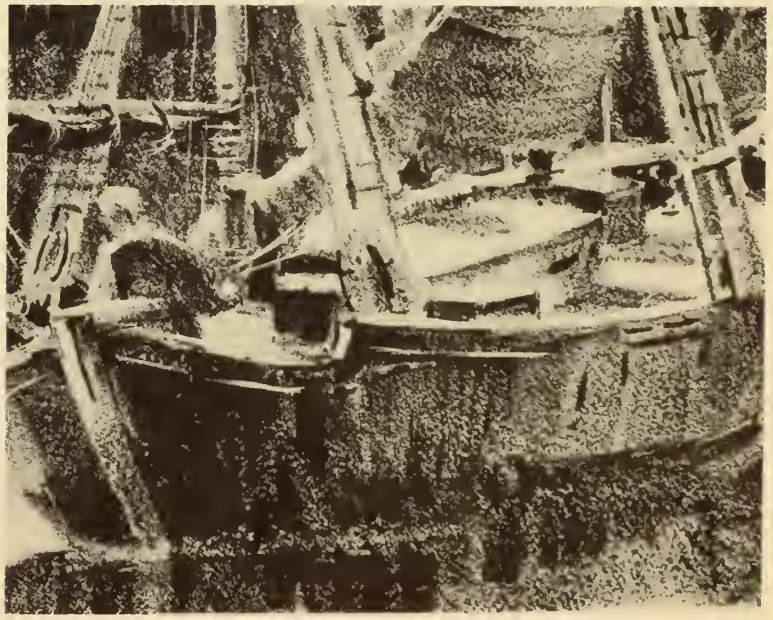
Eugene Berman — Appian Way

Tom Blainey — Christmas Card

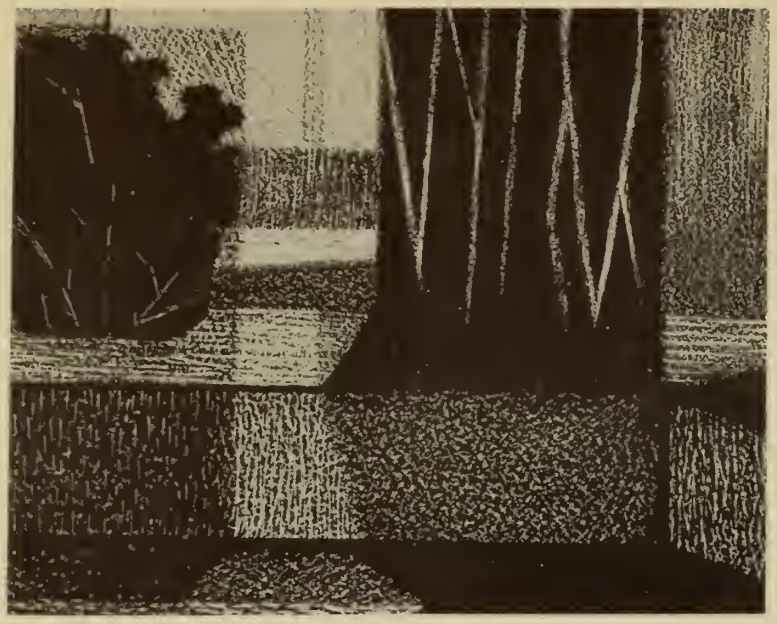
Everett Gee Jackson — Texas Farmer Bridling a Mule

Dan Lutz — The Harpist

Tyrus Wong — Running Horse



Arthur Beaumont — Korea Bound



Clinton Adams — Suburban Scene

Phil Dike — Balboa Harbor

Leonard Edmondson — Abstraction

Mary L. Finley Fry — Fences

Conrad Buff — American Pioneers

Richard Haines — Bus Stop

THE PICTURES

Note: Number and title is on the back of the picture.

1

Damping the Paper

2

The Damp Book

3

Grinding off the Old Image

4

Leveling up the Stone

5

Putting the Finish on the Stone

6

Jean Charlot, Drawing on the Stone

7

Mary L. Finley Fry, Drawing in Reverse

8

Mixing the Etch

9

Etching the Stone

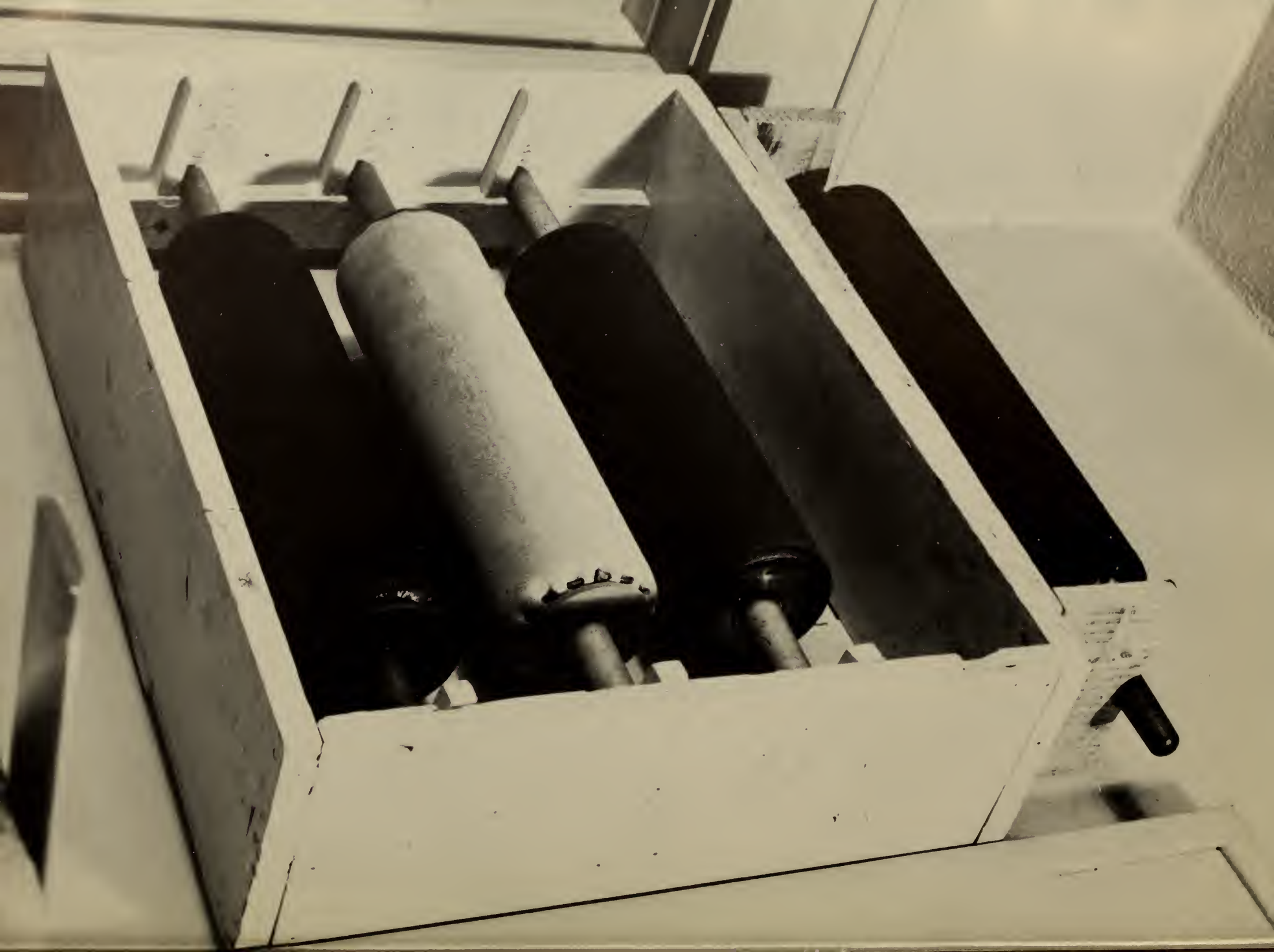
9120

10

Smoothing down the Etch

11

Storage of the Rollers



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Care of the Rollers

13

Inking the Slab

14

The Wash-out

15

Damping the Stone

16

The Roll-up

17

Laying the Paper

18

Running the Press

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Pulling the Print

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Making Ready to Print an Edition

21

Checking the Pull

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Registering for Color

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Care and Storage of the Stones

K17
K19
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K10
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Authenticating the Print

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Displaying the Prints

F5

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